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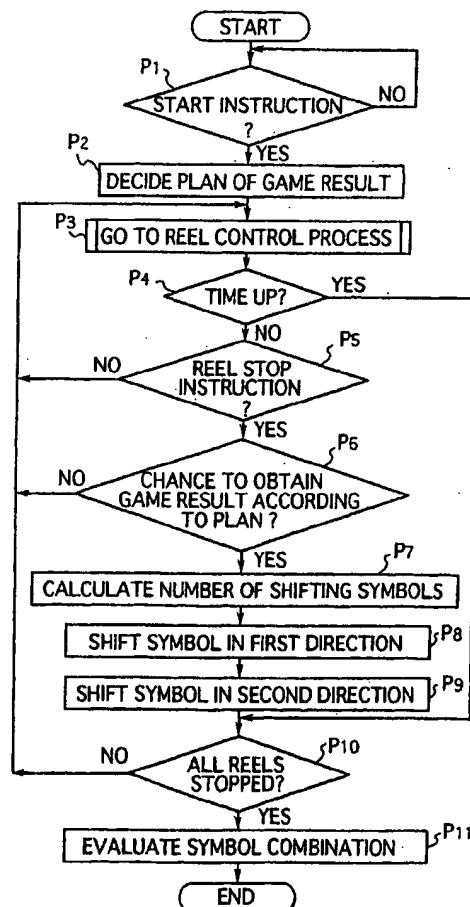
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(54) Game machine and method of controlling the same

(57) A game machine (10) comprises a plurality of cylindrical reels (32A, 32B and 32C) each provided with various kinds of symbols (m) on its outer surface. The reels (32A, 32B and 32C) are axially aligned and independently rotatable about an axis (34) in first and second directions (D1 and D2). Part of symbols (m) of the reels (32A, 32B and 32C) are displayed on a window (31a, 31b and 31c) having a predetermined winning line (L1, L2A, L2B, L3A and L3B) crossing over the symbol (m) of the respective reels (32A, 32B and 32C) to define the symbols (m) on the winning line (L1, L2A, L2B, L3A and L3B) as a symbol combination. The reels (32A, 32B and 32C) start rotating in the first direction (D1) in response to an operation of a start lever (42). The reels (32A, 32B and 32C) independently stop rotating in response to respective operations of stop buttons (41a, 41b and 41c) to bring the symbol (m) of the corresponding reel (32A, 32B and 32C) to a standstill on the winning line (L1, L2A, L2B, L3A and L3B) to obtain the symbol combination after all reels (32A, 32B and 32C) are stopped rotating. The symbols are shifted in the first and second directions (D1 and D2) within a predetermined waiting time to change the symbol combination.

FIG. 6



EP 1 003 138 A2

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game result is determined.

[0011] In accordance with a first aspect of the present invention, there is provided a game machine for allowing a player to play a game comprising: displaying means capable of displaying a plurality of predetermined symbol arrangements each having various kinds of symbols arranged in a predetermined order; scrolling means for allowing the displaying means to display part of the symbols of the respective symbol arrangements on a window having a predetermined winning line crossing over the symbol of the respective symbol arrangements to define the symbols positioned on the winning line as a symbol combination and to scroll the symbols of the symbol arrangements within the window in two different predetermined scroll directions including first and second scroll directions; scroll starting means for allowing the scrolling means to start to scroll the symbols of the symbol arrangements within the window in the first scroll direction in response to a predetermined start instruction; receiving means for receiving a plurality of stop instructions corresponding to the plurality of symbol arrangements; scroll stopping means for allowing the scrolling means to independently stop scrolling the symbols of the symbol arrangements in response to the plurality of stop instructions, respectively, received by the receiving means to bring the symbol of the corresponding symbol arrangements to a standstill on the winning line to obtain the symbol combination after all of the symbols are stopped scrolling; shifting means for allowing the displaying means to shift the symbols of the symbol arrangements in the first and second scroll directions within a predetermined waiting time after the stop instructions, respectively, are received by the receiving means to change the symbol combination; and evaluating means for evaluating the symbol combination on the basis of a predetermined winning combination for winning.

[0012] In the above game machine, the symbols of each of the symbol arrangements may be aligned with a line substantially parallel with the first scroll direction, and the first scroll direction is opposite to the second scroll direction. Furthermore, the displaying means may include a plurality of rotatable cylindrical reels each provided with the various kinds of symbols arranged on its outer surface at predetermined intervals. The reels may be axially aligned and independently rotatable about an axis in the first and second directions.

[0013] In the above game machine, the shifting means may be operated to judge whether the symbol of each of the symbol arrangements positioned on the winning line is shifted or not on the basis of a predetermined game condition. Moreover, the shifting means may be operated to determine the number of shifting symbols of each of the symbol arrangements for shifting the symbols in the second scroll direction on the basis of the predetermined game condition. Furthermore, the shifting means may be operated to determine the number of shifting symbols of each of the symbol arrangements for

shifting the symbols in the first scroll direction on the basis of the number of symbols of each symbol arrangements for shifting the symbols in the second scroll direction.

5 [0014] The above game machine may further comprise inputting means for allowing the player to input the stop instructions to the game machine.

10 [0015] The above game machine may further comprise deciding means for previously deciding a plan of the result of the game. The shifting means may be operated to judge whether there is a chance to obtain the result of the game according to the plan decided by the deciding means within the waiting time or not, and to shift the symbol in the first and second scroll directions so that the result of the game accords to the plan decided by the deciding means. Moreover, the plan decided by the deciding means may include a plan of the symbol combination for evaluating. The shifting means may be operated to judge whether the symbols of the symbol arrangement can be brought to a standstill on the winning line within the waiting time to obtain the symbol combination according to the plan decided by the deciding means or not, and to shift the symbol in the first and second scroll directions to change the symbol combination in accordance with the plan decided by the deciding means when the judgment is made that the symbols of the symbol arrangement can be brought to a standstill on the winning line within the waiting time to obtain the symbol combination according to the plan decided by the deciding means.

30 [0016] In accordance with a second aspect of the present invention, there is provided a method of controlling a game machine for allowing a player to play a game comprising the steps of:

- 35 (a) forming a plurality of predetermined symbol arrangements each having various kinds of symbols arranged in a predetermined order;
- 40 (b) displaying part of the symbols of the respective symbol arrangements on a window having a predetermined winning line crossing over the symbol of the respective symbol arrangements to define the symbols positioned on the winning line as a symbol combination;
- 45 (c) scrolling the symbols of the symbol arrangements within the window in a first predetermined scroll direction in response to a predetermined start instruction;
- 50 (d) receiving a plurality of stop instructions corresponding to the plurality of symbol arrangements;
- (e) stopping scrolling the symbols of the symbol arrangements in response to the plurality of the stop instructions, respectively, received in the step (d) to bring the symbols of the corresponding symbol arrangements to a standstill on the winning line;
- 55 (f) obtaining the symbol combination after all of the symbol arrangements are stopped scrolling in the step (e);

the symbol arrangement can be brought to a standstill at the winning point within the waiting time to obtain the symbol according to the plan decided by the deciding means or not, and to shift the symbol in the second scroll direction to change the kind of the symbol in accordance with the plan decided by the deciding means when the judgment is made that the symbol of the symbol arrangement can be brought to a standstill at the winning point within the waiting time to obtain the symbol according to the plan decided by the deciding means.

[0027] In accordance with a fourth aspect of the present invention, there is provided a method of controlling a game machine for allowing a player to play a game, comprising the steps of:

- (a) forming a predetermined symbol arrangement having various kinds of symbols arranged in a predetermined order;
- (b) displaying part of the symbols of the symbol arrangement on a window;
- (c) scrolling the symbols within the window in a first predetermined scroll direction in response to a predetermined start instruction;
- (d) receiving a predetermined stop instruction;
- (e) stopping the scroll of the symbols in response to the stop instruction received in the step (d) to bring one of the symbols to a standstill at a predetermined winning point provided with the window;
- (f) shifting the symbol in the first scroll direction within a predetermined waiting time after the step (d);
- (g) shifting the symbol in a second predetermined scroll direction different from the first scroll direction;
- (h) performing the steps (f) and (g) to change the kind of the symbol positioned at the winning point; and
- (i) evaluating the kind of the symbol positioned at the winning point on the basis of a predetermined kind of symbol for winning.

[0028] In the above method, the symbols may be aligned with a line substantially parallel with the first scroll direction, and the second scroll direction is opposite to the first scroll direction.

[0029] In the above method, the step (h) may have the step of judging whether the symbol positioned at the winning point is shifted or not on the basis of a predetermined game condition. The step (g) may have the step of determining the number of shifting symbols for shifting the symbols in the second scroll direction on the basis of the predetermined game condition. Furthermore, the step (f) may have the step of determining the number of shifting symbols for shifting the symbols in the first scroll direction on the basis of the number of shifting symbols for shifting the symbols in the second scroll direction in the step (g).

[0030] The above method may further comprise the step of allowing the player to input the stop instruction

to the game machine.

[0031] The above method may further comprise the steps of:

- (j) deciding a plan of the result of the game; and
- (k) judging whether there is a chance to obtain the result of the game according to the plan decided in the step (j) within the waiting time or not; and
- (l) performing the step (i) so that the result of the game accords to the plan decided in the step (j).

[0032] In the above method, the plan decided in the step (j) may include a plan of the kind of symbol for evaluating. The step (k) may have the step of judging whether the symbol of the symbol arrangement can be brought to a standstill at the winning point within the waiting time to obtain the symbol according to the plan decided in the step (j) or not. Moreover, the step (h) may have the step of performing the step (g) to change the kind of the symbol in accordance with the plan decided in the step (j) when the judgment is made in the step (k) that the symbol of the symbol arrangement can be brought to a standstill at the winning point within the waiting time to obtain the symbol according to the plan decided in the step (j).

BRIEF DESCRIPTION OF THE DRAWINGS

[0033] The feature and advantages of the present invention will become more apparent from the following detailed description when considered in connection with the accompanying drawings, wherein:

FIG. 1 is a perspective view of a first embodiment of the game machine according to the present invention;

FIG. 2 is a perspective view of the reel unit provided for the game machine shown in FIG. 1;

FIG. 3 is a front view of the symbol displaying area of the reel unit panel of the game machine shown in FIG. 1;

FIG. 4 is a schematic front view of the reel unit panel of the game machine shown in FIG. 1;

FIG. 5 is a schematic block diagram showing the configuration of the control unit of the game machine shown in FIG. 1;

FIG. 6 is a flowchart showing the flow of the process of controlling the game machine shown in FIG. 1;

FIG. 7 is a flowchart showing the flow of the reel control process called by the step in the process shown in FIG. 6;

FIG. 8 is a flowchart showing the flow of the payout process of the game machine shown in FIG. 1;

FIG. 9 is a flowchart showing the flow of a main routine of the program executed by the microcomputer of the game machine shown in FIG. 1;

FIG. 10 is a flowchart followed by the steps of the program shown in FIG. 9;

tions of the symbols in every direction.

[0040] The graphical symbol may be drawn by a dot pattern on the screen of the digital displaying unit and reproduced to shift the dot pattern in a predetermined direction to the forward position by a predetermined number of dots in response to every interrupt signals. Thus, the graphical symbol can be moved in various different directions crossed at various different angles.

[0041] As shown in FIG. 4, the symbol displaying area 31 has a plurality of prize-winning lines including: a center winning line L1 horizontally extending over the center of the windows 31a, 31b and 31c; a pair of upper and lower winning lines L2A and L2B disposed on upper and lower sides of the center winning line L1 and extending in parallel relationship with the center winning line L1; and a pair of cross winning lines L3A and L3B crossed at oblique angles other and traversing the prize-winning lines L1, L2A and L2B. Each of the prize-winning lines is thus designed to cross one symbol of each of the reels 32A, 32B and 32C within the symbol displaying area 31, thereby having three symbols positioned thereon in total. The combination of three symbols positioned on each of the prize-winning lines is referred to as "three-symbols combination" hereinafter. In another embodiment, the winning line may be replaced with a predetermined winning point.

[0042] The slot machine 10 comprises an investing medal number indicating unit 21 for indicating the number of investing medals for the present game by blinking. The investing medal number indicating unit 21 has a plurality of lamps arranged on one side of the symbol displaying area 31 of the reel panel unit 12. The investing medal number indicating unit 21 includes: a lamp 21a disposed on one end side of the center winning line L1 for indicating that one medal is invested in betting for the present game in which the slot machine 10 is operated to evaluate a single three-symbols combination positioned on the center winning line L1; a pair of lamps 21b disposed on one end sides of the upper and lower winning lines L2A and L2B, respectively, for indicating that two medals are invested in betting for the present game in which the slot machine 10 is operated to evaluate two three-symbols combinations positioned on the upper and lower winning lines L2A and L2B, respectively, in addition to one three-symbols combination positioned on the center winning line L1; and a pair of lamps 21c disposed on one end sides of the cross winning lines L3A and L3B, respectively, for indicating that three medals are invested in betting for the present game in which the slot machine 10 is operated to evaluate five three-symbols combinations positioned on five prize-winning lines L1, L2A, L2B, L3A and L3B, respectively.

[0043] As shown in FIG. 1, the slot machine 10 further comprises a game condition indicating unit 22 has a plurality of game condition indicators arranged on the other side of the symbol displaying area 31 of the reel panel unit 12 and indicating various game conditions in vari-

ous game situations. The game condition indicators includes: a medal insertion indicator 22a for indicating that the slot machine 10 is operating under the condition to enable the slot machine 10 to receive the medals therein; a game start indicator 22b for indicating that the slot machine 10 is operating under the condition to enable the slot machine 10 to start rotating the reels; a prize winning indicator 22c for indicating that a prize is won in the present game; a waiting indicator 22d for indicating that the slot machine 10 is operating under the unready condition; and a free game indicator 22e for indicating that the slot machine 10 is operating under the condition to play a free game.

[0044] The slot machine 10 further comprises a display unit 23, such as a Liquid Crystal Display unit (LCD), disposed under the reel panel unit 12 for displaying various information on the game, e.g., the number of credit medals, an expectation of the prize-winning, the number of prize-winning games, the number of pay-out medals, and so on.

[0045] The operation unit 13 comprises: a plurality of stop buttons 41a, 41b and 41c arranged under the LCD unit 23 for respectively operating the reels 32A, 32B and 32C to stop rotating; a start lever 42 arranged on the left side of the stop buttons 41a, 41b and 41c for operating all of the reels 32A, 32B and 32C to simultaneously start rotating; a plurality of medal investing buttons 43a, 43b and 43c arranged on the left side of the LCD unit 23 for allowing the player to respectively select one medal, two medals and three medals for investing in betting for the present game; a medal inlet slot 45 for allowing the player to insert the medals one by one by hand to the slot machine 10 therethrough; and a medal inlet port 46 for allowing the player to insert a lot of medals to a container, not shown, in the slot machine. The container is capable to storing therein a large number of medals in order to automatically invest the medals in betting by extracting some medals therefrom. The operation unit 13 further comprises a credit medal settlement button 47 for allowing the player to request the slot machine 10 to pay the credit medals by extracting from a hopper 81, not shown in detailed.

[0046] The game condition indicating panel 14 is disposed on the top of the front panel 11 of the slot machine 10 and has a lamp disposed behind the panel for indicating a plurality of different modes in which the slot machine 10 operates. The game condition indicating panel 14 is operated to blink at a plurality of different predetermined blinking interval patterns corresponding to the different modes, respectively. The plurality of different modes may include a prize-winning play mode, a repeatedly prize-winning play mode, an error mode, a play-out mode, a prize-winning expecting mode, a medal withdrawing mode, and so on.

[0047] The dividend rate display panel 15 is positioned under the game condition indicating panel 14 and designed to indicate information on the dividend rate for the game in the slot machine 10. For instance, the in-

for example, four phases A, B, C and D. The phases A, B, C and D of the winding coil group are sequentially driven on in response to the motor driving pulse transmitted every predetermined step time (e.g., 1.88msec) in a predetermined cyclic order, for instance, the phases A and D are driven on, the phase A is then driven on, the phases A and B are then driven on, the phase B is then driven on, the phases B and C are then driven on, the phase C is then driven on, the phases C and D are then driven on, and the phase D is then driven on. In this sequence, each of the stepping motors 35A, 35B and 35C can be repeatedly rotated at one step angle every step of driving one of the phases, thereby making it possible to cause the corresponding reel continuously rotate in a predetermined direction, for instance the first direction D1. The reel may be rotated in a reverse direction, e.g., the second direction D2, by sequentially driving the winding coil group in reverse cyclic order, i.e., the phases A and D, the phase D, the phases D and C, the phase C, the phases C and B, the phase B, the phases B and A, and the phase A. The microcomputer 54 is operated to control the motor driving circuit 71 to produce the motor driving pulses in order to rotate the stepping motor 35A, 35B and 35C, respectively. The detailed description of this operation will be made later.

[0058] The rotation speed of the reel can be regulated by varying the pulse duration of the motor driving pulse. In case of the reel accelerating process, the motor driving circuit 71 is firstly operated to output the motor driving pulse for a first predetermined pulse duration, e.g., 22.56msec ($=1.88 \times 12$). The motor driving circuit 71 is then operated to output the motor driving pulse for a second predetermined pulse duration, e.g., 13.16msec ($=1.88 \times 7$). After repeating to output this motor driving pulse predetermined times, the motor driving circuit 71 is operated to repeatedly output the motor driving pulse for a third predetermined pulse duration, e.g., 9.40msec ($=1.88 \times 5$) predetermined times. Thereafter, the motor driving pulse is repeatedly outputted for a fourth predetermined pulse duration, e.g., 3.76msec (1.88×2) predetermined times before each reel is rotated at a constant speed. Consequently, the stepping motor can be driven to rotate at the constant speed, while the motor driving pulse is repeatedly outputted for a fifth predetermined pulse duration, e.g., 1.88msec.

[0059] In case of the reel decelerating process, on the other hand, the pulse duration of the motor driving pulse is gradually increased in order to stop rotating the reel.

[0060] The hopper driving circuit 72 is electrically connected to the hopper 81. The hopper driving circuit 72 is designed to generate a hopper driving signal in response to a predetermined pay-out request signal transmitted from the microcomputer 54. The hopper driving signal is then outputted to the hopper 81 so that the medals is paid out from the hopper 81 in response to the pay-out request signal. The display driving circuit 73 is electrically connected to the LCD unit 23 and designed to drive the LCD unit 23 to display the various informa-

tion on the game, e.g., the number of credit medals, an expectation of prize-winning, the number of prize-winning, the number of pay-out medals, and so on.

[0061] The audio outputting unit driving circuit 74 is electrically connected to an audio outputting unit, such as the speakers 19a and 19b, and designed to drive the speakers 19a and 19b. The indicator driving circuit 75 is electrically connected to a plurality of back lamps 83, which are provided in the inside of the housing 10a of the slot machine 10, for example, the lamps of the lamp units 33A, 33B and 33C, and the lamp of the game condition indicating panel 14. The indicator driving circuit 75 is designed to operate the back lamps 83 to turn on and off or blink at predetermined intervals according to the aforesaid conditions of the game. The reel stop signal circuit 76 is electrically connected to the stop buttons 41a, 41b and 41c. The reel stop signal circuit 76 is designed to generate a plurality of predetermined stop instruction signals for stopping the rotations of the reels 32A, 32B and 32C in response to the operations of stop buttons 41a, 41b and 41c, respectively. The stop instruction signals are then transmitted to the microcomputer 54. The player may selectively operate the stop buttons 41a, 41b and 41c so that the reels 32A, 32B and 32C, respectively, stop rotating to bring the desired symbols to a standstill on a predetermined position, e.g., the effective prize-winning lines. The stop buttons 41a, 41b and 41c serve as scroll stopping means in cooperation with the reel stop signal circuit 76 to allow the microcomputer 54 to generate the stop instruction signals to instruct the reels 32A, 32B and 32C, respectively, to stop rotating.

[0062] The reel position sensing circuit 77 is electrically connected to the reels 32A, 32B and 32C and designed to sense the position of each of the reels 32A, 32B and 32C by calculating a rotary angle on the basis of a predetermined standard position. The reel position sensing circuit 77 is further designed to generate a predetermined reset pulse, when each of the reels 32A, 32B and 32C makes one rotation to transmit to the microcomputer 54.

[0063] The pay-out signal circuit 78 is electrically connected to a medal sensing unit 82 (not shown in detail) for sensing that the medal is paid out and outputting a medal sensing signal. The pay-out signal circuit 78 is designed to count the number of the pay-out medals in accordance with the medal sensing signal transmitted from the medal sensing unit 82, and then to output a pay-out completion signal to the microcomputer 54 when the counted number of the pay-out medals exceeds a predetermined number.

[0064] The microcomputer 54 thus constructed can operate to control the operations of the circuits, actuators and units, e.g., the stepping motors 35A, 35B and 35C and the display unit 23, in accordance with a predetermined control program stored in the ROM 52 in cooperation with data stored in the ROM 52, and various information including an operation information on the

swer in the step P4 is "YES", the step P4 proceeds to the step P10. At this time, all of the reels should have been brought into a standstill already by the reel control process to make the three-symbols combinations corresponding to the effective prize-winning lines displayed on the symbol displaying area 31. When the answer in the step P4 is "NO", the step P4 proceeds to the step P5.

[0076] In the step P5, the control unit 50 is operated to judge whether any one of the stop instructions corresponding to the reels 32A, 32B and 32C is received from the reel stop signal circuit 76 or not. When the answer in the step P5 is "YES", the step P5 proceeds to the step P6. When the answer in the step P5 is "NO", the control is returned from the step P5 to the step P3.

[0077] In the step P6, the control unit 50 is operated to judge whether there is a chance to obtain the result of the game according to the plan decided in the step P2 or not.

[0078] More specifically, the judgment in the step P6 is made whether the present game will end in failure or win on the basis of the kinds of symbols respective positioned on the effective prize-winning lines when the corresponding reel is stopped rotating in response to the operated stop button. When the judgment is firstly made that the present game will win, the judgment is further made whether the symbols, which will be positioned on the effective prize-winning line, can constitute the decided winning combination or not.

[0079] In another embodiment, when the judgment is firstly made that the present game will win, the judgment is further made whether each combination of two symbols, which has been positioned on each effective prize-winning line, can constitute the decided winning combination or not. When the judgment is made that the combination of two symbols can constitute the decided winning combination, the judgment is further made whether a target symbol of the last rotating reel, which can constitute the decided winning combination in cooperation with the two symbols, can stand still on the effective prize-winning line or not.

[0080] This means that the control unit 50 is operated to calculate the position of the target symbol of the last rotating reel to judge whether the target symbol of the last reel is positioned within a predetermined range or not. The predetermined range may be assumed to be a predetermined maximum number of shifting symbols, e.g., 4 columns, deviated from the position on the effective prize-winning line when the stop button is operated to stop the rotation of the last rotating reel. This means that the target symbol of the last reel can be positioned on the effective prize-winning line after forwardly proceeding to the predetermined number of shifting symbols. Probably, the predetermined range may be assumed to be a predetermined rotary angle of the reel corresponding the number of shifting symbols.

[0081] In the step P7, the control unit 50 is operated to calculate the number of shifting symbols within the predetermined maximum number of shifting symbols.

The control unit 50 is further operated to calculate a first rotary angle at which the reel is rotated in the first direction D1 and a second rotary angle at which the reel is rotated in the second direction D2 on the basis of the number of the shifting symbols. In this embodiment, the second direction D2 is opposite to the first direction D1. In another embodiment, the first and second directions D1 and D2 may cross at a predetermined angle, e.g., a right angle. The rotations at the first and second rotary angle will cause the target symbol of the reel to forwardly proceed to the predetermined number of shifting symbols to stand still on the effective prize-winning line.

[0082] In the following step P8, the control unit 50 is operated to allow the corresponding reel to start on the rotation stop operation by performing the reel control process and to rotate at the first rotary angle in the first direction D1 in order to shift the symbol of the reel before the rotation of the reel is completed. In the step P9, the control unit 50 is operated to allow the corresponding reel to further rotate at the second rotary angle in the second direction D2 in order to shift the symbol of the reel. Namely, the target symbol of the reel is slowly returned, if possible, to position at the effective prize-winning line. After the symbol is shifted in the first and second directions D1 and D2 in the steps P8 and P9, the symbol of the reel is shifted at the shifting number in the end. After stopping the reel, the step P9 proceeds to the step P10 wherein the control unit 50 is operated to judge whether all reels have been stopped already or not. When the answer in the step P10 is "YES", the step P10 proceeds to the step P11. When the answer in the step P10 is "NO", the control is returned from the step P10 to the step P3.

[0083] In another embodiment, when the number of the stationary reels, each of which has been stopped rotating already, exceeds to a predetermined number of reels, the steps P6 to P9 may be bypassed. The only remaining rotating reels may be stopped to rotate in accordance with the steps P6 to P9.

[0084] As shown in FIG. 7, the reel control process, which is called by the process of controlling the slot machine 10 shown in FIG. 6, comprises the steps s1 to s4. In the step s1, the control unit 50 is operated to decide the aforesaid pulse output duration for outputting each motor driving pulses and a count criterion according to a predetermined motor driving table stored in the ROM 52. The count criterion is used in the following step s3 for waiting an interrupt to allow the motor driving circuit 71 to output the motor driving pulses. As described above, the motor driving pulses are provided for the stepping motors 35A, 35B and 35C, respectively. The description of the representative operation of one of the stepping motors 35A, 35B and 35C will be made hereinafter.

[0085] In the step s2, the control unit 50 is operated to input, from the divider 57, the interrupt signal pulse which is obtained by dividing the base clock pulse transmitted from the clock generator 56 and to then count the

the free game, the number of medals may be equal to that of the previous game. The step S102 then proceeds to the step S104.

[0095] When the answer in the step S101 is "NO", the step S101 proceeds to the step S103 wherein the microcomputer 54 is operated to wait for the insertion of the medals through the medal inlet port 45. More specifically, when the player inserts one medal to the slot machine 10 through the medal inlet port 45, only the center winning line L1 is made effective in betting. At this time, the investing medal number indicating unit 21a is turned on, thereby allowing the player to recognize this line to be effective in betting. When the player inserts two medals to the slot machine 10 through the medal inlet port 45, the upper and lower winning lines L2A and L2B are made effective in betting in addition to the center winning line L1. At this time, the investing medal number indicating unit 21b as well as 21a are turned on, thereby allowing the player to recognize these lines to be effective in betting. When player inserts three medals to the slot machine 10 through the medal inlet port 45, all of the winning lines L1, L2A, L2B, L3A and L3B are made effective in betting. At this time, all of the investing medal number indicating units 21a, 21b and 21c are turned on, thereby allowing the player to recognize these lines to be effective in betting.

[0096] In the step S103, the number of medals for betting is limited to three medals in a normal game playing, while the number of medals for betting is limited to one medal in a RB game playing. The microcomputer 54 is operated to perform another predetermined investing process of investing the inserted medals in betting for the present game. Then the step S103 proceeds to the step S104.

[0097] In the step S104, the microcomputer 54 is operated to judge whether the start lever 42 is operated or not on the basis of the predetermined input signal transmitted from the start switch 61. When the answer in the step S104 is "YES", the step S104 proceeds to the step S105. The microcomputer 54 is operated to wait in the step S104 until the player operates the start lever 42.

[0098] In the step S105, the microcomputer 54 is operated to sample a single random number for the operation of drawing a lottery from the random number sampling circuit 59 as described above. The sampled random number is temporarily stored in the RAM 53 in order to be used for decision on a plan of the result of the game in the later step S108.

[0099] In the step S106, the microcomputer 54 is operated to judge whether a predetermined waiting time is passed after starting the previous game or not. When the answer in the step S106 is "YES", the step S106 proceeds to the step S108. When the answer in the step S106 is "NO", the step S106 proceeds to the step S107 wherein the microcomputer 54 is operated to wait until the predetermined waiting time, for example, 4.1msec, is passed after starting the previous game. The step S107 proceeds to the step S108, when the predeter-

mined waiting time is over.

[0100] In the step S108, the microcomputer 54 is operated to look up the winning expectation table to find out the result of the present game in accordance with the random number stored in the RAM 53 in the step 105. The predetermined winning expectation table is previously stored in the ROM 52 as described above. On the basis of the obtained result, the microcomputer 54 is operated to have a plurality of predetermined flags respectively set or reset. These flags are temporarily stored in a predetermined winning request area in the RAM 53. In response to the set of the respective flags in the winning request area, a predetermined winning request signal corresponding to the set flag is generated.

[0101] More specifically, the microcomputer 54 is operated to judge whether the sampled random number is included within a predetermined prize-winning range of the winning expectation table or not. When the judgment is made that the sampled random number is included within the predetermined prize-winning range of the winning expectation table, the microcomputer 54 is then operated to set the corresponding flag to produce the winning request signal. When, on the other hand, the judgment is made that the sampled random number is excluded from the predetermined prize-winning range of the winning expectation table, the microcomputer 54 is then operated to reset the corresponding flag.

[0102] Referring to FIG. 13, there is shown an example of the winning request area A1 including six flags, for example, "failure" indicative that the game will be failure, "bullet" indicative that the game will get the combination of three bullet symbols, "bell" indicative that the game will get the combination of three bell symbols, "free game" indicative that the game will get the free game, "RB" indicative that the game will get the RB game, and "BB" indicative that the game will get the BB game, when respective these flags are set to "1". In case of FIG. 13, the bell flag is set to "1" wherein the game will be get the combination of three bell symbols.

[0103] As described above, at the time of detecting the start operation in the step S 104, the slot machine 10 is operated to perform the reel rotating process when the start lever 42 is operated. The CPU 51 is operated to output a predetermined control signal, such as the motor driving pulse, to the motor driving circuit 71 in response to the predetermined start instruction signal transmitted from the start switch 61 by sensing the operation of the start lever 42. The motor driving circuit 71 is operated to drive the stepping motors 35A, 35B and 35C to have the reels 32A, 32B and 32C, respectively, rotated.

[0104] The reel rotating process is performed by the microcomputer 54 in the following steps S109 to S111 in FIG. 9. In the step S109, the microcomputer 54 is operated to perform a predetermined initialization process to start rotating the reels 32A, 32B and 32C. The step S109 proceeds to the step S110 wherein the aforesaid

present game win a prize for BB game or not. When the answer in the step 129 is "YES", the step S129 proceeds to the step S130. When the answer in the step S129 is "NO", the step S129 proceeds to the step S131 wherein the microcomputer 54 is operated to judge whether the present game win a prize for RB game or not. When the answer in the step 131 is "YES", the step S131 proceeds to the step S132. When the answer in the step S131 is "NO", the step S131 proceeds to the step S133. In the steps S130 and 132, the microcomputer 54 is operated to set predetermined BB and RB enable flags to "1", respectively. In response to the enabled BB and RB enable flags, the microcomputer 54 is operated to initialize various information on the BB and RB games in predetermined data areas, thereby causing the slot machine 10 can operate under the BB and RB game conditions, respectively. The steps S127, S128, S130 and S132 then proceed to the step S135.

[0113] When the judgments in both of step S129 and S131 are made that no bonus game is gotten, the microcomputer 54 is operated to judge whether the present game win a prize for the free game or not in the step S133. When the answer in the step 133 is "YES", the step S133 proceeds to the step S134 wherein the microcomputer 54 is operated to set a free game request flag. In response to the request made by setting the free game request flag, the microcomputer 54 is operated to request the automatically inventing medal for the free game. When the answer in the step S133 is "NO", the step S133 proceeds to the step S135 wherein the microcomputer 54 is operated to set a flag indicative that a single game routine is completed.

[0114] Referring to FIG. 12 of the drawings, there is shown a first example of the reel stopping process routine of controlling to stop the rotation of the reels. As shown in FIG. 12, the reel stopping process routine comprises the steps S151 to S156.

[0115] In the step S 151, the microcomputer 54 is operated to calculate the number of shifting symbols. The number of shifting symbols is determined on the basis of the various information including: the flags in the winning request area; the value read out from a predetermined refresh register (R-register) when each stop button is operated; the present positions of the reels (or the positions of the target symbols) and so on. The number of shifting symbols is defined as the number of symbols which can be shifted to have the target symbol positioned on the effective prize-winning line within a predetermined time duration, e.g., 190msec, provided for in the present law, after detecting the stop operation for the reel. In case when the symbols are shifted only in the first direction D1, the number of shifting symbols may be limited to four symbols. The R-register is designed to refresh data in the register cyclically varied from 0 to a predetermined value at high speed.

[0116] In the following step S152, the microcomputer 54 is operated to judge whether the target symbol for the winning combination can be stopped on the effective

prize-winning line or not. This judgment is made on the basis of the flags in the winning request area, i.e., whether any one of the flags including the three "bell" or "bullet" symbols combination flag, the RB game flag, and the BB game flag are set or not. When the answer in the step S152 is "YES", the step S152 proceeds to the step S153. When the answer in the step S152 is "NO", the step S152 proceeds to the step S154.

[0117] In the step S153, the microcomputer 54 is operated to add a predetermined additional value, e.g., one, to the number of shifting symbols. In the following step S154, the microcomputer 54 is operated to perform the reel stopping process wherein the reel is rotated in the first direction D1 to shift the symbol of the reel on the basis of the number of shifting symbols obtained in the step S152 or S153.

[0118] In the following step S155, the microcomputer 54 is operated to judge whether the addition of the number of shifting symbols is performed in the step S153 or not. When the answer in the step S155 is "YES", the step S155 proceeds to the step S156. When the answer in the step S155 is "NO", the control is returned to the main routine. In the step S156, the microcomputer 54 is operated to perform the reel stopping process wherein the reel is rotated in the second direction D2 to shift the symbol of the reel on the basis of the predetermined additional value for adding the number of shifting symbols. After rotating the symbols in the first and second directions D1 and D2 in the steps S154 and S156, the target symbol of the reel is brought to a standstill on the effective prize-winning line to decide the three-symbols combination.

[0119] The description of the operation of the slot machine 10 in accordance with the game program shown in FIGS. 9 to 12 will be made hereinafter.

[0120] The microcomputer 54 is operated to start to execute the game program after performing the predetermined initializing procedure as described above. When the player inserts three medals into the slot machine 10 through the medal inlet port 45, there is no investing request. The judgment is made in the step S101, shown in FIG. 9, that there is no automatically investing request, therefore, the step S101 proceeds to the step S103 wherein all of the investing medal number indicating units 21a, 21b and 21c are lighted up and the investing medal number is set to three, i.e., all of prize-winning lines are effective in betting.

[0121] When the player operates the start lever 42, the step S104 proceeds to the step S105 wherein a single random number for the operation of drawing a lottery is sampled from the random number sampling circuit 59 and then the sampled random number is temporarily stored in the RAM 53.

[0122] When 4.1 seconds have been passed after starting the previous game, the plan of the result of the present game is found out by looking up the winning expectation table in accordance with the random number stored in the RAM 53 in the step S105.

game machine is repeatedly recalled.

[0135] Referring to FIGS. 18(a) to 18(d), there is shown a timing chart of the above operation of the reels. In response to the operation of the start lever 42, the start instruction signal is set to "1" as shown in FIG. 18 (c). When the edge of the risen start instruction signal is detected, the reels 32A, 32B and 32C begin to forwardly rotate in the first direction **D1** as shown in FIG. 18(a). When the stop button 41c is operated to allow the reel stop signal circuit 76 to generate the stop instruction signal corresponding to the reel 32C, the edge of the stop instruction signal is detected as shown in FIG. 18 (d). In response to this detection, the number of the shifting symbols is calculated and the judgment is made whether the backward rotation should be performed or not. When the judgment is made that the backward rotation should not be performed, the reel 32C is controlled to stop rotating in the first direction **D1** to bring the target symbol to a standstill after the target symbol passes over the effective prize-winning line.

[0136] When the judgment is made that the backward rotation should be performed, the reel 32C is controlled to stop rotating in the first direction **D1** to bring the symbol to a standstill on the winning line after the symbol is shifted in the first direction **D1** to the columns corresponding to the number of the shifting symbols. In FIG. 18(a), the controlling time duration **T1** is variable in accordance with the number of shifting symbols. The sum of the controlling time duration **T1** and the over-run and stop operating time duration **T2** is indicative of the predetermined time duration for shifting the symbols, e.g., 190msec. When a predetermined time, e.g., one to several seconds, included in the over-run and stop operating time duration **T2** has been passed after stopping the forward rotation of the reel 32C, the reel 32C is controlled to slowly backwardly rotate, i.e., rotate in the second direction **D2** to shift the target symbol back to one column thereby causing the target symbol to position on the effective prize-winning line.

[0137] It will be understood from the aforementioned description that the game machine according to the present invention has an advantage over the prior art in that the game machine can attract to the player because that the target symbol for winning combination is returned from over-running position to the effective prize-winning line to win the present game, after the player considers that the player fails in the winning in the present game. Accordingly, the player can maintain a high expectation of winning until all reels are completely stopped rotating. The game machine can therefore greatly excite the player just before the game result is determined.

[0138] Furthermore, the player having the enormous skill can enjoy the game because that the reel stopping process can be performed under various conditions determined on the basis of the operations of the player to bring the game to win a big prize in the game machine according to the present invention.

[0139] Referring now to FIG. 19 of the drawings, there is shown a second embodiment of the reel stop routine according to the present invention. In the second embodiment, the slot machine may comprise the same constitutional elements as those of the first embodiment except this reel stop routine stored in the ROM 52 and executed by the microcomputer 54.

[0140] In the step S251, the microcomputer 54 is operated to calculate the number of shifting symbols. The number of shifting symbols is determined on the basis of the various information including: the flags in the winning request area; the value read out from a predetermined R-register when each stop button is operated; the present positions of the reels (or the positions of the target symbols) and so on. The number of shifting symbols is defined as the number of symbols which can be shifted to have the target symbol positioned on the effective prize-winning line within a predetermined time duration, e.g., 190msec, provided for in the present law, after detecting the stop operation for the reel. In case when the symbols are shifted only in the first direction **D1**, the number of shifting symbols may be limited to four symbols. The R-register is designed to refresh data in the register cyclically varied from 0 to a predetermined value at high speed.

[0141] In the following step S252, the microcomputer 54 is operated to judge whether the target symbol for the winning combination can be stopped on the effective prize-winning line or not. This judgment is made on the basis of the flags in the winning request area, i.e., whether any one of the flags including the three "bell" or "bullet" symbols combination flag, and the bonus flags having the RB game flag and the BB game flag, are set or not. When the answer in the step S252 is "YES", the step S252 proceeds to the step S253. When the answer in the step S252 is "NO", the step S252 proceeds to the step S256.

[0142] In the step S253, the microcomputer 54 is operated to judge whether the bonus flag is set or not. When the judgment is made that the bonus flag is set, the step S253 proceeds to the step S254 wherein the microcomputer 54 is operated to add a predetermined additional value, e.g., two, to the number of shifting symbols. When, on the other hand, the judgment is made that the bonus flag is reset, the step S253 proceeds to the step S255 wherein the microcomputer 54 is operated to add a predetermined additional value, e.g., one, to the number of shifting symbols. The steps S254 and S255 proceed to the step S256 wherein the microcomputer 54 is operated to perform the reel stopping process wherein the reel is rotated in the first direction **D1** to shift the symbol of the reel on the basis of the number of shifting symbols obtained in the step S251, S254 or S255. The reel is thus controlled in the step S256 to shift the target symbol to the position proceeding over the effective prize-winning line to one or two columns ahead.

[0143] In the following step S257, the microcomputer

ing over the effective prize-winning line to one or two columns ahead.

[0152] In the following step S357, the microcomputer 54 is operated to judge whether the addition of the number of shifting symbols is performed in the step S355 or not. When the answer in the step S357 is "YES", the step S357 proceeds to the step S358. When the answer in the step S357 is "NO", the control is returned to the main routine. In the step S358, the microcomputer 54 is operated to perform the reel stopping process wherein the reel is rotated in the second direction D2 to shift the symbol of the reel on the basis of the number of additional shifting symbols. After rotating the symbols in the first and second directions D1 and D2 in the steps S356 and S358, the symbol of the reel is brought to a standstill on the effective prize-winning line to decide the three-symbols combination.

[0153] The slot machine 10 thus constructed can attract to the player because that the target symbol for winning combination is returned from over-running position to the effective prize-winning line to win the present game, after the player considers that the player fails in the winning in the present game. Accordingly, the player can maintain a high expectation of winning until all reels are completely stopped rotating. The slot machine 10 can therefore greatly excite the player just before the game result is determined.

[0154] Furthermore, the player having the enormous skill can enjoy the game because that the reel stopping process can be performed under various conditions determined on the basis of the operations of the player to bring the game to win a big prize in the game machine according to the present invention.

[0155] In the aforesaid embodiments, the game machine according to the present invention is exemplified in the slot machine. In another embodiment, the game machine according to the present invention may be another game machine including a ball shooting game machine, such as a *pachinko*, or a video game, which has functions of the game machine according to the present invention.

[0156] In the above embodiments, the predetermined program may be written by an appropriate programming language. Then a plurality of the program files and data files are converted to an execute format and stored in a nonvolatile storage device, such as PROM (programmable read only memory), EPROM (erasable programmable read only-memory), EEPROM (electrically erasable and programmable ROM), CD-ROM, DVD-ROM and so on. In this embodiment, the ROM 52 may be mounted on a circuit board, not shown, in the control unit 50. The ROM 52 can be removed from the circuit board, thereby making it possible to modify the program and data stored in the ROM 52 with ease. Preferably, the circuit board may be also removed from the control unit 50 to be able to modify and repair the circuit board. Alternatively, the program and data stored in the EPROM may be modified and repaired from the host

computer by remote operation.

[0157] It will be apparent to those skilled in the art and it is contemplated that variations and/or changes in the embodiments illustrated and described herein may be without departure from the present invention. Accordingly, it is intended that the foregoing description is illustrative only, not limiting, and that the true spirit and scope of the present invention will be determined by the appended claims.

Claims

1. A game machine (10) for allowing a player to play a game comprising:

displaying means (12) capable of displaying a plurality of predetermined symbol arrangements each having various kinds of symbols (m) arranged in a predetermined order; scrolling means (35A, 35B, 35C, 71, 77, 51 and 54) for allowing said displaying means (12) to display part of said symbols (m) of said respective symbol arrangements on a window (31a, 31b and 31c) having a predetermined winning line (L1, L2A, L2B, L3A and L3B) crossing over said symbol of said respective symbol arrangements to define said symbols (m) positioned on said winning line (L1, L2A, L2B, L3A and L3B) as a symbol combination and to scroll said symbols (m) of said symbol arrangements within said window (31a, 31b and 31c) in two different predetermined scroll directions including first and second scroll directions (D1 and D2); scroll starting means (42 and 61) for allowing said scrolling means (35A, 35B, 35C, 71, 77, 51 and 54) to start to scroll said symbols (m) of said symbol arrangements within said window (31a, 31b and 31c) in said first scroll direction (D1) in response to a predetermined start instruction; receiving means (41a, 41b, 41c, and 76) for receiving a plurality of stop instructions corresponding to said plurality of symbol arrangements; scroll stopping means (35A, 35B, 35C, 71, 77, 51 and 54) for allowing said scrolling means (35A, 35B, 35C, 71, 77, 51 and 54) to independently stop scrolling said symbols (m) of said symbol arrangements in response to said plurality of stop instructions, respectively, received by said receiving means (41a, 41b, 41c, and 76) to bring the symbol of said corresponding symbol arrangements to a standstill on said winning line (L1, L2A, L2B, L3A and L3B) to obtain said symbol combination after all of said symbols are stopped scrolling; shifting means (35A, 35B, 35C, 71, 77, 51 and

- (e) stopping scrolling said symbols (m) of said symbol arrangements in response to said plurality of said stop instructions, respectively, received in the step (d) to bring the symbols of said corresponding symbol arrangements to a standstill on said winning line (L1, L2A, L2B, L3A and L3B);
- (f) obtaining said symbol combination after all of said symbol arrangements are stopped scrolling in the step (e);
- (g) shifting said symbols (m) of said symbol arrangements in said first scroll direction (D1) within a predetermined waiting time after the step (d);
- (h) shifting said symbols (m) of said symbol arrangements in a second predetermined scroll direction (D2) different from said first scroll direction (D1) within said waiting time;
- (i) performing the steps (g) and (h) to change said symbol combination; and
- (j) evaluating said symbol combination on the basis of a predetermined winning combination for winning.
11. The method as set forth in claim 10, in which said symbols (m) of each of said symbol arrangements are aligned with a line substantially parallel with said first scroll direction (D1), and said first scroll direction (D1) is opposite to said second scroll direction (D2).
12. The method as set forth in claim 10, in which the step (i) has the step of judging whether the symbol of each of said symbol arrangements positioned on said winning line (L1, L2A, L2B, L3A and L3B) is shifted or not on the basis of a predetermined game condition.
13. The method as set forth in claim 12, in which the step (h) has the step of determining the number of shifting symbols of each of said symbol arrangements for shifting said symbols (m) in said second scroll direction (D2) on the basis of said predetermined game condition.
14. The method as set forth in claim 13, in which the step (g) has the step of determining the number of shifting symbols of each of said symbol arrangements for shifting said symbols (m) in said first scroll direction (D1) on the basis of said number of symbols of each symbol arrangements for shifting said symbols (m) in said second scroll direction (D2) in the step (h).
15. The method as set forth in claim 10, further comprising the step of allowing said player to input said stop instructions to said game machine (10).
16. The method as set forth in claim 10, further comprising the steps of:
- (k) deciding a plan of the result of said game;
- (l) judging whether there is a chance to obtain the result of said game according to said plan decided in the step (k) within said waiting time or not; and
- (m) performing the step (i) so that the result of said game accords to said plan decided in the step (k).
17. The method as set forth in claim 16, in which said plan decided in the step (k) includes a plan of said symbol combination for evaluating, the step (1) having the step of judging whether the symbols of said symbol arrangement can be brought to a standstill on said winning line (L1, L2A, L2B, L3A and L3B) within said waiting time to obtain said symbol combination according to said plan decided in the step (k) or not, and the step (i) having the step of performing the step (h) to change said symbol combination in accordance with said plan decided in the step (k) when the judgment is made in the step (1) that the symbols of said symbol arrangement can be brought to a standstill on said winning line (L1, L2A, L2B, L3A and L3B) within said waiting time to obtain said symbol combination according to said plan decided in the step (k).
18. A game machine (10) for allowing a player to play a game comprising:
- displaying means (12) capable of displaying a predetermined symbol arrangement having various kinds of symbols (m) arranged in a predetermined order;
- scrolling means (35A, 35B, 35C, 71, 77, 51 and 54) for allowing said displaying means (12) to display part of said symbols (m) of said symbol arrangement on a window (31a, 31b and 31c) having a predetermined winning point and to scroll said symbols within said window (31a, 31b and 31c) in a first predetermined scroll direction (D1);
- scroll starting means (42 and 61) for allowing said scrolling means (35A, 35B, 35C, 71, 77, 51 and 54) to start to scroll said symbols (m) within said window (31a, 31b and 31c) in said first scroll direction (D1) in response to a predetermined start instruction;
- receiving means (41a, 41b, 41c, and 76) for receiving a predetermined stop instruction;
- scroll stopping means (35A, 35B, 35C, 71, 77, 51 and 54) for allowing said scrolling means (35A, 35B, 35C, 71, 77, 51 and 54) to stop scrolling said symbols (m) in response to said stop instruction received by said receiving

symbols (m) are aligned with a line substantially parallel with said first scroll direction (D1), and said second scroll direction (D2) is opposite to said first scroll direction (D1).

- 5
28. The method as set forth in claim 26, in which the step (h) has the step of judging whether said symbol positioned at said winning point is shifted or not on the basis of a predetermined game condition. 10
29. The method as set forth in claim 28, in which the step (g) has the step of determining the number of shifting symbols for shifting said symbols (m) in said second scroll direction (D2) on the basis of said predetermined game condition. 15
30. The method as set forth in claim 29, in which the step (f) has the step of determining the number of shifting symbols for shifting said symbols (m) in said first scroll direction (D1) on the basis of said number of shifting symbols for shifting said symbols (m) in said second scroll direction (D2) in the step (g). 20
31. The method as set forth in claim 26, further comprising the step of allowing said player to input said stop instruction to said game machine (10). 25
32. The method as set forth in claim 26, further comprising the steps of: 30
 - (j) deciding a plan of the result of said game; and
 - (k) judging whether there is a chance to obtain the result of said game according to said plan decided in the step (j) within said waiting time or not; and 35
 - (l) performing the step (i) so that the result of said game accords to said plan decided in the step (j). 40
33. The method as set forth in claim 32, in which said plan decided in the step (j) includes a plan of said kind of symbol for evaluating, the step (k) has the step of judging whether the symbol of said symbol arrangement can be brought to a standstill at said winning point within said waiting time to obtain said symbol according to said plan decided in the step (j) or not, and the step (h) having the step of performing the step (g) to change the kind of said symbol in accordance with said plan decided in the step (j) when the judgment is made in the step (k) that the symbol of said symbol arrangement can be brought to a standstill at said winning point within said waiting time to obtain said symbol according to said plan decided in the step (j). 45 50 55

FIG. 2

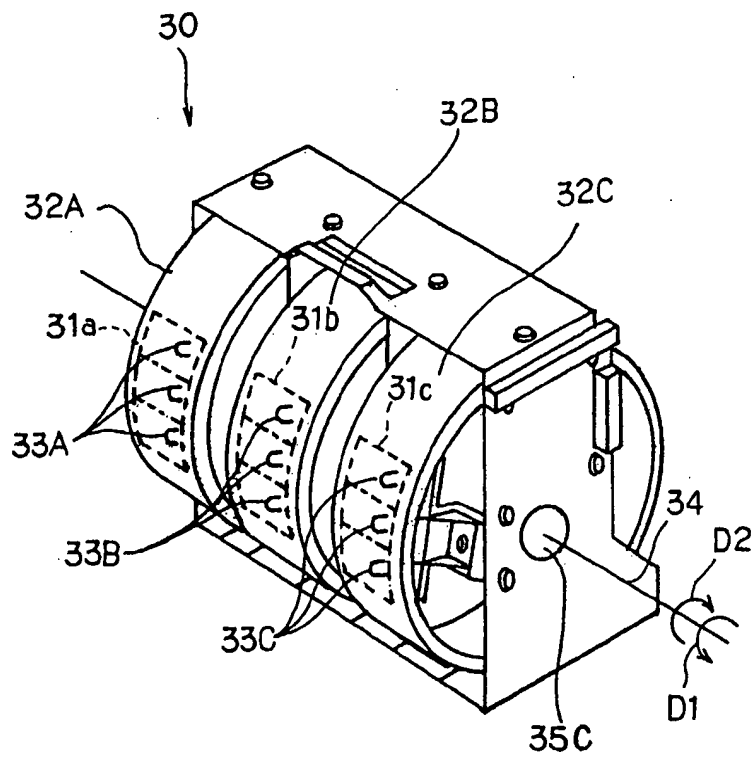


FIG. 4

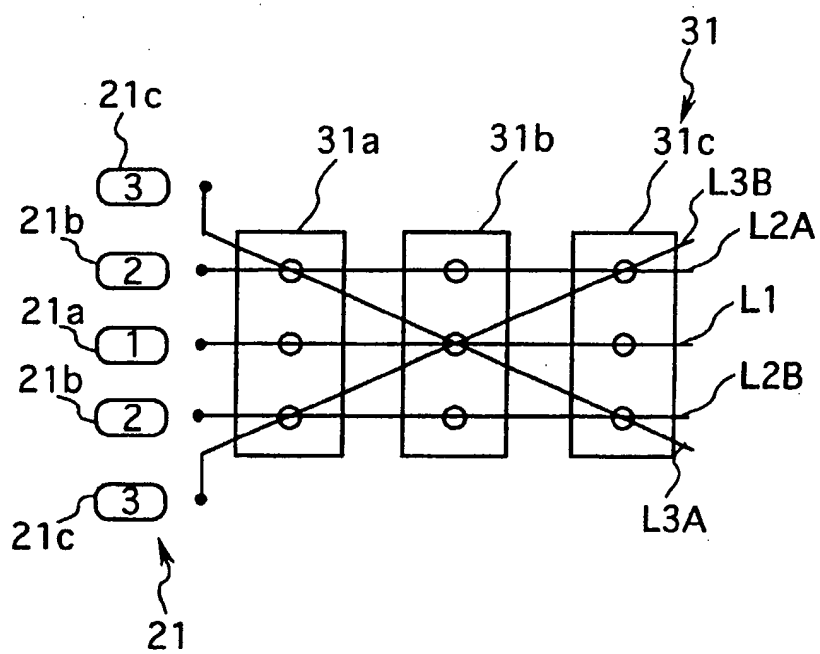


FIG. 6

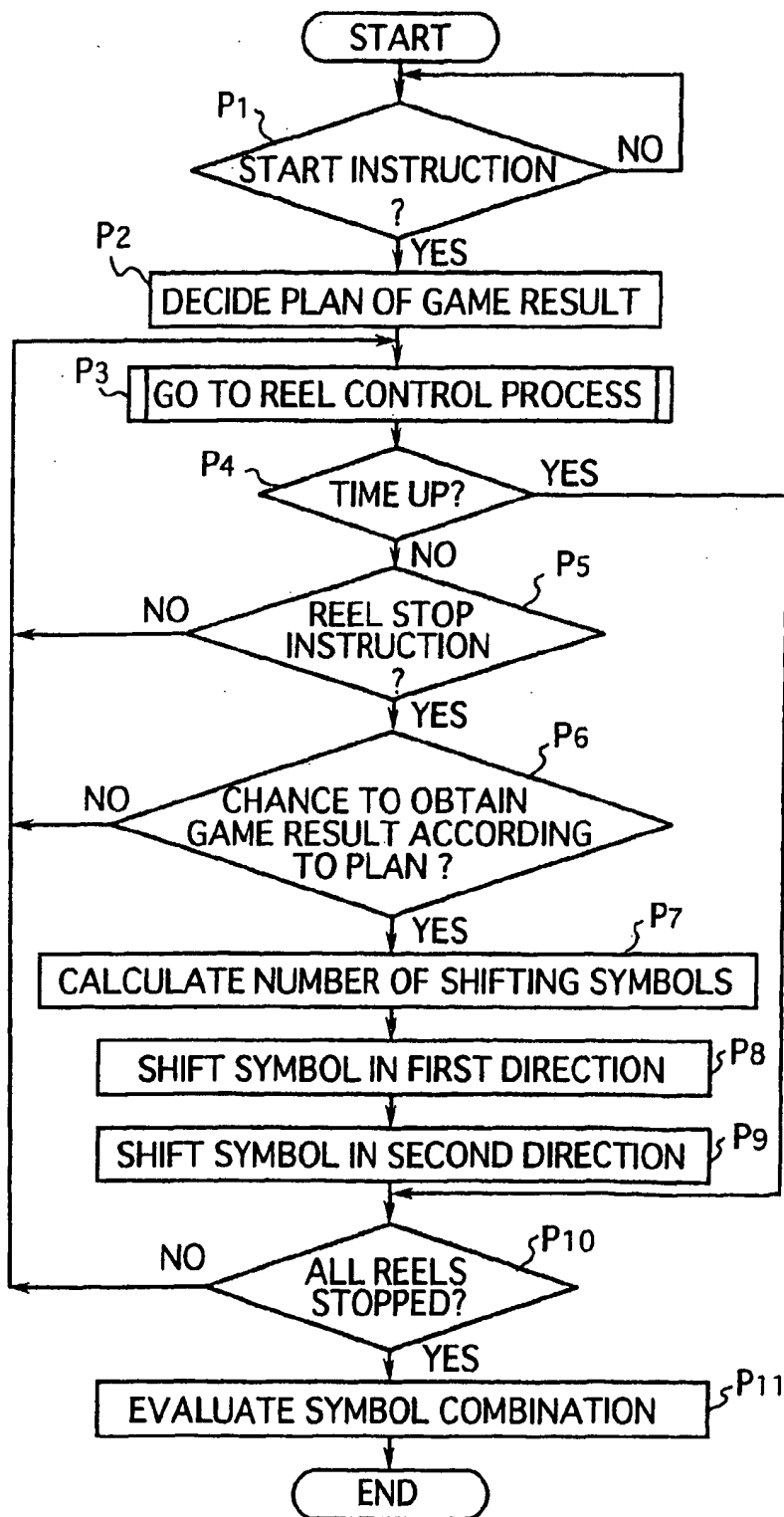


FIG. 8

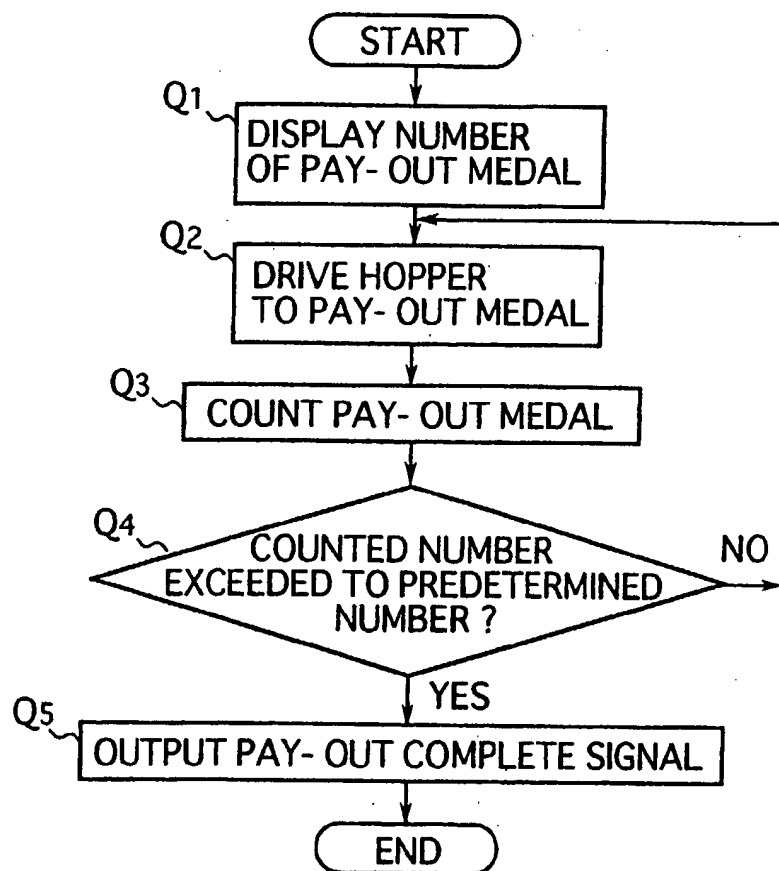


FIG. 10

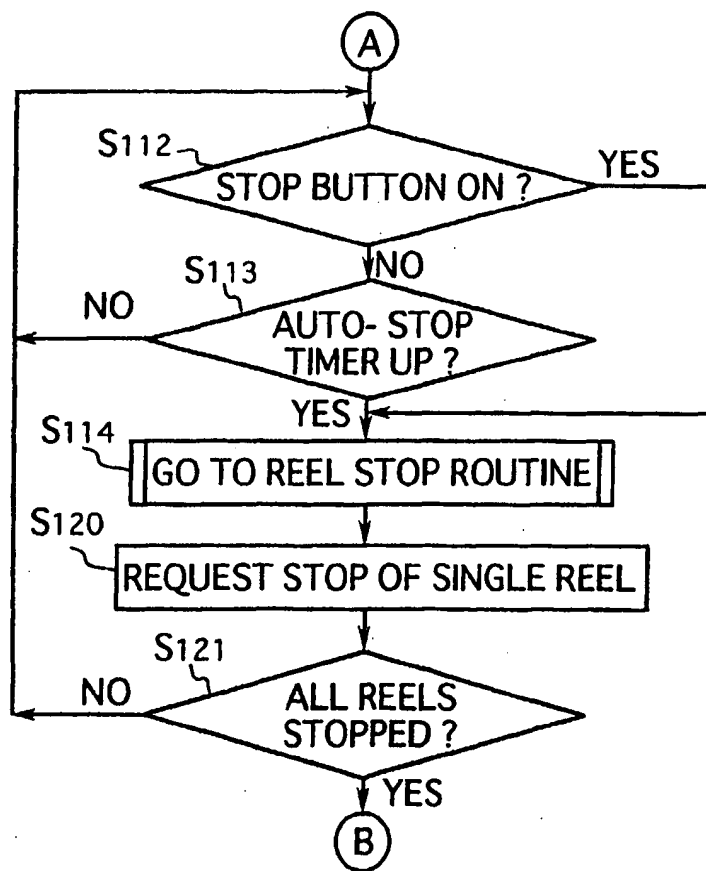


FIG. 12

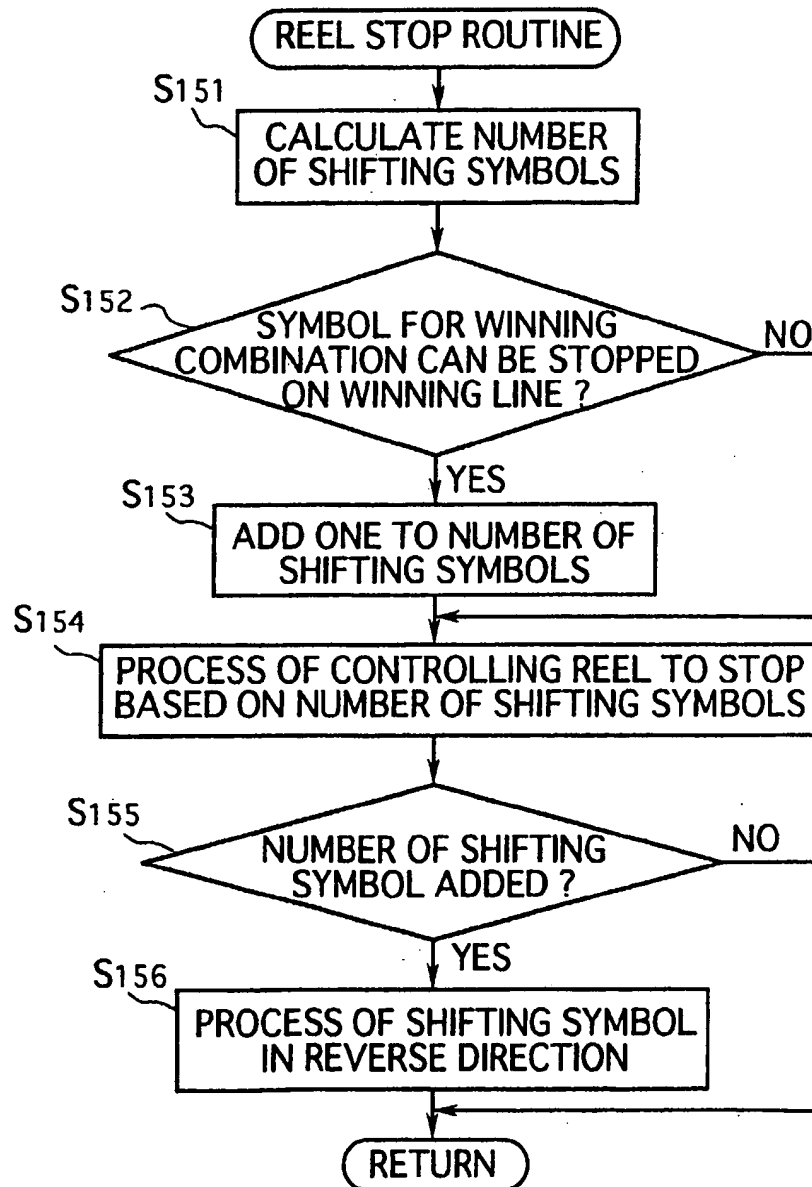


FIG. 14

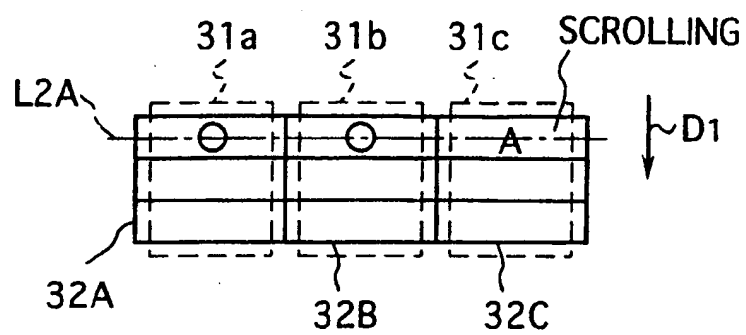
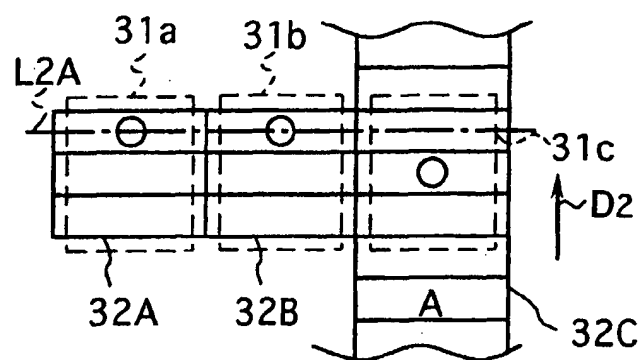
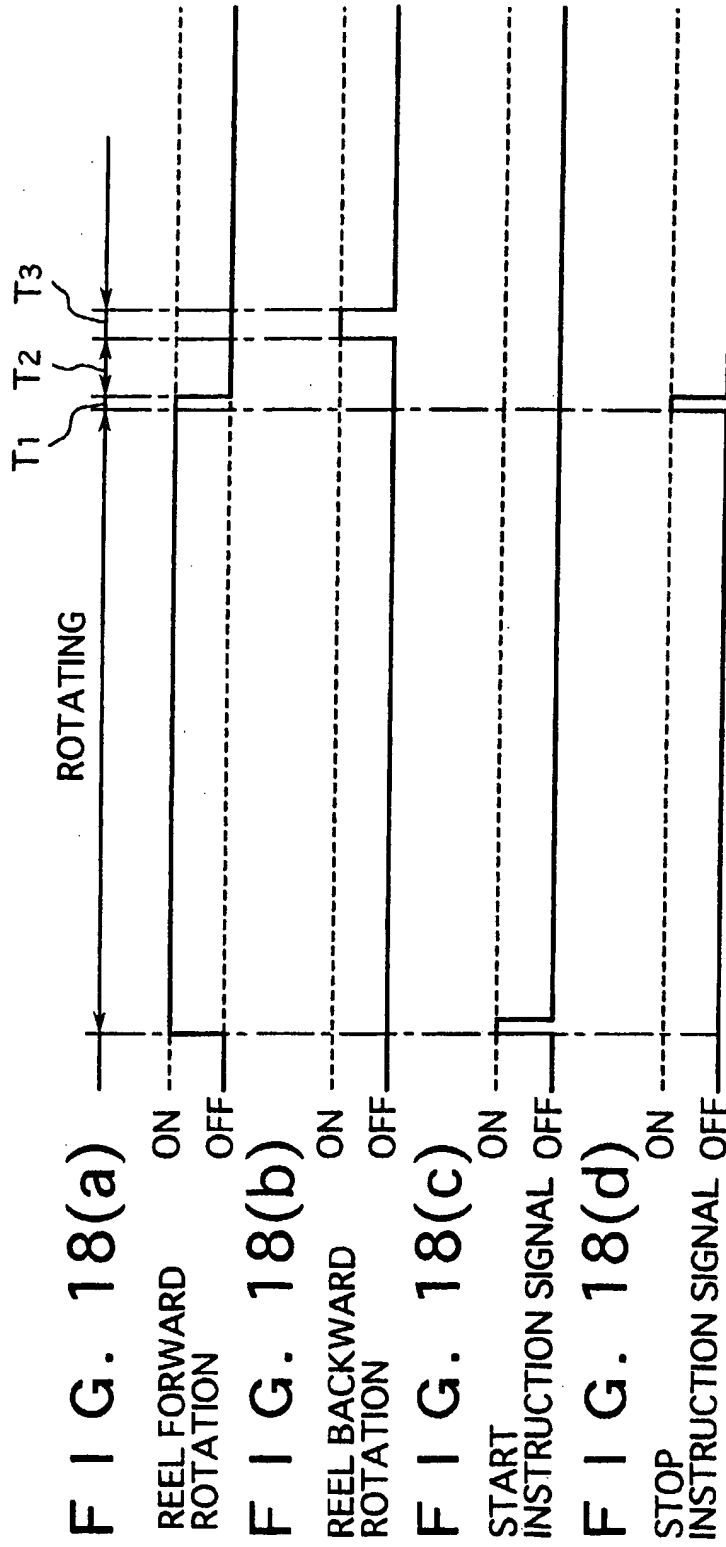


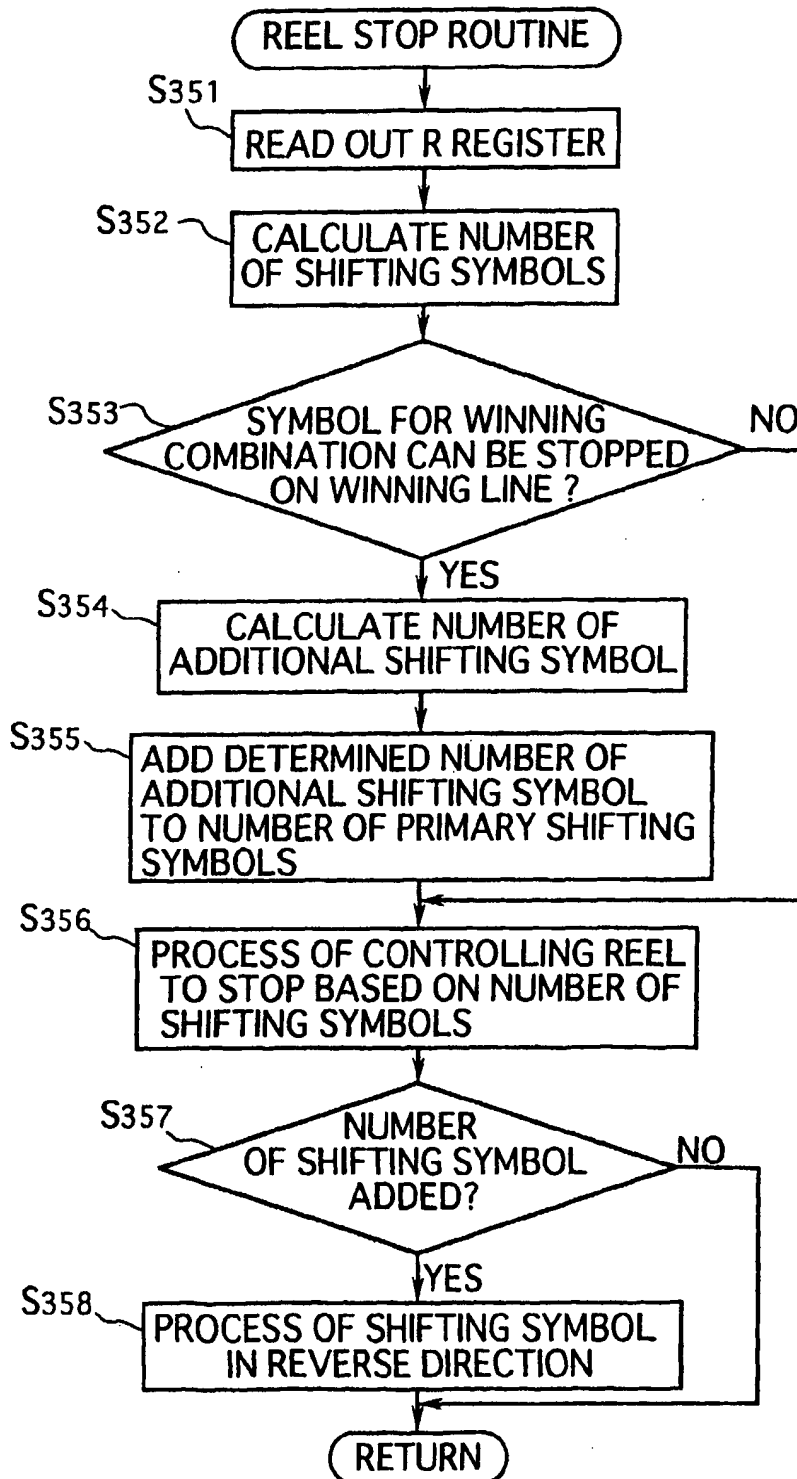
FIG. 16

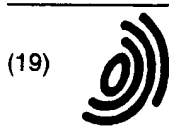




T1 : CONTROLLING TIME
T2 : OVER-RUN AND STOP OPERATING TIME
T3 : REEL BACKWARD ROTATING TIME

FIG. 20





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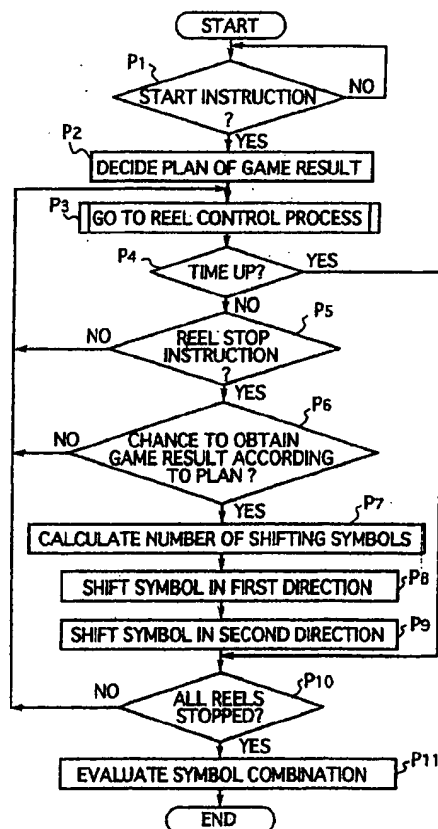
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(71) Applicant: **Aruze Corporation**
Tokyo (JP)

(54) **Game machine and method of controlling the same**

(57) A game machine (10) comprises a plurality of cylindrical reels (32A, 32B and 32C) each provided with various kinds of symbols (m) on its outer surface. The reels (32A, 32B and 32C) are axially aligned and independently rotatable about an axis (34) in first and second directions (D1 and D2). Part of symbols (m) of the reels (32A, 32B and 32C) are displayed on a window (31a, 31b and 31c) having a predetermined winning line (L1, L2A, L2B, L3A and L3B) crossing over the symbol (m) of the respective reels (32A, 32B and 32C) to define the symbols (m) on the winning line (L1, L2A, L2B, L3A and L3B) as a symbol combination. The reels (32A, 32B and 32C) start rotating in the first direction (D1) in response to an operation of a start lever (42). The reels (32A, 32B and 32C) independently stop rotating in response to respective operations of stop buttons (41a, 41b and 41c) to bring the symbol (m) of the corresponding reel (32A, 32B and 32C) to a standstill on the winning line (L1, L2A, L2B, L3A and L3B) to obtain the symbol combination after all reels (32A, 32B and 32C) are stopped rotating. The symbols are shifted in the first and second directions (D1 and D2) within a predetermined waiting time to change the symbol combination.

FIG. 6



EP 1 003 138 A3

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 99 30 9070

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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25-09-2001

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EPO FORM P0489

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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